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## **Examining gender differences in drivers’ thoughts and feelings about different outcomes of speeding: Implications for future anti-speeding messages**

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### **Abstract**

Speeding remains a pervasive road safety problem, increasing both crash frequency and severity. Advertising countermeasures which aim to change individuals’ attitudes and behaviours are a key component in the array of countermeasures aimed at reducing this risky behaviour. Enhancing individuals’ perceptions of the personal relevance of such messages is important for increasing persuasiveness.

This study examined what males and females reported as the most concerning aspects associated with (i) receiving a speeding fine, (ii) losing one’s license, and (iii) being involved in a crash. For each of these outcomes, a range of specific and appropriate aspects were assessed. For instance, in relation to receiving a fine, individuals reported the extent to which they would, for example, feel concerned about losing demerit points and paying more in insurance premiums.

An online survey of 751 drivers (579 males; 16-79 years) was administered. When controlling for age, overall significant gender differences were found in relation to two of the three outcomes; receiving a fine and being in a crash. Follow-up tests of univariate effects revealed that females consistently reported being significantly more concerned than males on all aspects. Thus, for being fined, females were significantly more concerned with, for example, being caught and receiving a ticket in the mail; while, for being in a crash, specific aspects included, for example, injuring/killing oneself and seeing oneself as not a good/safe driver. The findings are discussed in terms of their implications for developing well-targeted messages aimed at discouraging drivers from speeding.

**Keywords:** road safety advertising, anti-speeding messages, developing message content, persuasiveness, gender effects

### **Introduction**

Speeding remains a pervasive road safety problem, increasing both crash frequency and severity (Aarts & van Schagen, 2006; Conner et al., 2007; Fildes & Lee, 1993; Kloeden et al., 2007). In the attempt to influence attitudes as well as reduce and prevent this high risk behaviour, advertising countermeasures have long represented a key component of road safety initiatives. Many factors influence, however, whether such persuasive messages achieve their objectives. For instance, a message which is considered by members of the intended target

audience as being of limited personal relevance is unlikely to persuade. A notable example of this tendency is in relation to males reporting being less influenced by negative, fear-based approaches which threaten physical harm, than females (Goldenbeld, Twisk, & Houwing, 2008; Lewis et al., 2007, 2008). Despite representing the often-intended target audience of such graphic, fear-based persuasion, a growing body of evidence suggests that males are not being persuaded by such approaches (Tay, 2002; Tay & Ozanne, 2002). Such evidence is concerning given that males are not only more likely to engage in speeding (Fleiter et al, 2006; Harré et al., 1996), but they are also, relative to females, more likely to be involved in road trauma (ATSB, 2007; González-Iglesias et al., 2012). Males have also been shown to score higher on perceptual biases, such as optimism bias, that contributes to them believing that they are “better” and more skilful drivers than their peers, compared with females (Harré, Foster, & O’Neill, 2005; White, Cunningham, & Titchener, 2011). There is, therefore, a crucial need for research to identify persuasive approaches which may better target males, as a high risk road user group.

Consistent with this need, the current study sought to understand more about the concerning aspects associated with the consequences of speeding and any potential gender differences among these concerns. According to learning theory (see Baldwin & Baldwin, 2001), the consequences one experiences as a result of behavioural enactment are important determinants of future behaviour. For instance, behaviour which results in positive consequences (rewards) for the individual is likely to be maintained or repeated whereas behaviour which results in negative, aversive consequences (punishers) is likely to be diminished or eliminated. The depiction of behavioural consequences is a common and, arguably, essential component of any anti-speeding message. It is via vicarious learning that individuals may adopt behaviours and attitudes given the rewards and punishers they have seen as resulting from behaviours modeled by others in road safety advertisements (see Bandura, 1977, 1986; see also Donovan et al., 1995). Therefore, it follows that, with greater understanding about the consequences of speeding and, in particular, the specific aspects of such outcomes which males and females report as concerning to them, valuable insight may be gained to guide the development of future anti-speeding message content. The current paper provides an in-depth investigation of gender differences in relation to the most concerning aspects associated with three of the more common consequences of speeding; namely, (i) receiving a speeding fine, (ii) losing one’s license, and (iii) being involved in a crash. These consequences often feature within anti-speeding messages.

Of note, this current paper relates to, but represents an important extension upon, the findings reported previously within Lewis et al. (2012). In this earlier paper, gender differences were examined in relation to males’ and females’ definitions of speeding as well as their perceptions of how one would feel if they were to be caught for speeding. Overall, the results demonstrated that there were in fact significant gender differences in relation to these aspects; for instance, males reported a willingness to drive at higher speeds (and still feel in control) than females in 100km/hr zones and females were more likely to report that they would feel embarrassed if they received a speeding fine and to acknowledge that they should not have been speeding, than males. Based on these findings, Lewis et al. (2012) argued for the need to ensure close scrutiny of all message content to the extent that subtle changes in content may correspond with improvements (or indeed, decrements) in perceived personal relevance and subsequent persuasiveness. The current paper is underpinned by this same premise, positing that the development of targeted messages requires close examination of key aspects of message content. In this paper, the focus was upon identifying the concerning aspects that males and females associate with different outcomes of speeding.

## Method

Participants held a current driver's license and were residents of Victoria, Australia. The online survey was distributed to existing databases, held by the Transport Accident Commission (TAC), and which comprised community members and stakeholders. Based on a total of 3,728 individuals who opened the email about the survey (and thus the researchers can be confident were individuals who had been aware of the study), 20% ( $n = 751$ ) went on to complete the survey. Of those 751 participants, 579 were male (77.1%)<sup>1</sup> drivers aged between 16-79 years ( $M = 44.83$  years,  $SD = 13.81$  years). In terms of education level, the largest proportion of the sample identified high school as being their highest level of education completed (41.1%) while just over half of the sample (51.9%) reported having completed some form of tertiary education including TAFE (21.3%), or an undergraduate (14.5%) or a postgraduate degree (16.0%). The majority of participants reported not having received a speeding infringement (70.9%) and not having been involved in a crash (87.7%) in the previous 12 months. Table 1 provides further details of the sample. All participants were eligible for a ticket to win 1 of 10 \$AUD100 shopping vouchers.

**Table 1**  
*Socio-demographic characteristics of the study's sample*

Socio-demographic characteristics of the study's sample			
Characteristic	<i>n</i> (%)	Characteristic	<i>n</i> (%)
Gender <sup>a</sup> and Age (years)		Receipt of speeding infringements (Yes/No) (Overall sample and as a function of gender)	
579 males/169 females (77.1/22.5)		In previous 12 months <sup>c</sup>	Overall: 152/594 (20.2/70.9)
<i>M</i> <sub>age</sub> = 44.83, <i>SD</i> = 13.81, <i>Range</i> = 16 to 79			Males: 122/452 (21.1/78.1)
		In previous 2/3 years <sup>d</sup>	Females: 30/139 (17.8/82.2)
			Overall: 293/445 (39.0/59.3)
			Males: 241/28 (41.6/56.6)
			Females: 51/115 (30.2/68.0)
License type (motorcycle license) <sup>b</sup>		Crash involvement (at fault or not) (Yes/No) (Overall sample and as a function of gender)	
Learners permit	10 (1.5)	In previous 12 months <sup>e</sup>	Overall: 77/659 (10.3/87.7)
			Males: 59/507 (10.2/87.6)
Probationary 1	5 (0.7)	In previous 2/3 years <sup>f</sup>	Females: 18/149 (10.7/88.2)
Probationary 2	23 (3.1)		Overall: 104/626 (13.8/83.4)
Full	711 (94.7)		Males: 77/485 (13.3/83.8)
			Females: 27/139 (16.0/82.2)

Note: <sup>a</sup> 3 participants did not indicate their gender. <sup>b</sup> Two participants did not specify a license type. <sup>c</sup> 5 participants did not provide a response. <sup>d</sup> 13 participants did not provide a response. <sup>e</sup> 15 participants did not provide a response. <sup>f</sup> 21 participants did not provide a response.

For the survey items relevant to the current paper, participants first completed a section on demographic items and subsequently completed their responses regarding how concerned they would feel in relation to a range of specific and appropriate aspects associated with the three outcomes of speeding under investigation; (i) receiving a speeding fine, (ii) losing one's license, and (iii) being involved in a road crash. Table 2 lists all of the items which were assessed in relation to each of the outcomes examined. Each of the items was assessed on a 5-point scale of 1 (*Not at all concerned*), 2 (*Not very concerned*), 3 (*Quite concerned*), 4 (*Very concerned*), 5 (*Extremely concerned*). Higher scores were indicative of an individual being

<sup>1</sup> Three participants did not indicate their gender.

more concerned. All of the items were devised purposefully for this research to enable more thorough investigation of the specific aspects associated with concern which arise from these different potential outcomes of speeding. As indicated in Table 2, all items commenced with the question stem of, “How concerned would you feel about...”. Of note, the scale data, although strictly ordinal in nature, was treated as interval quality data to facilitate the use of more sophisticated parametric analyses.

**Table 2**

Survey items assessing aspects of concern in relation to the outcomes of (i) receiving a speeding fine, (ii) losing one’s license, and (iii) being involved in a road crash.

<b>1. Receiving a speeding fine</b>
<b>How concerned would you feel about...</b>
Being caught for speeding?
Receiving a ticket in the mail from a speed camera?
Paying a fine for speeding?
Losing time while being pulled over by a mobile radar for speeding?
Paying more for insurance premiums?
Losing demerit points for speeding?
<b>2. Losing one’s license</b>
<b>How concerned would you feel about...</b>
Losing your license due to too many speeding fines?
Experiencing automatic loss of your license due to speeding?
Losing your freedom because you had lost your license due to speeding?
Losing time because you have to use other transport options?
Losing the enjoyment/pleasure of driving?
<b>3. Being involved in a road crash</b>
<b>How concerned would you feel about...</b>
Being involved in a crash?
Seeing yourself as not a good or safe driver because you caused a crash?
Losing time because you have to use other transport options?
Injuring/killing a loved one in your vehicle in a road crash?
Injuring/killing someone you don’t know in a road crash?
Paying more for car insurance premiums?
Losing respect from important others because you caused a crash?
Injuring yourself in a road crash?

## Results

A series of MANCOVA analyses, controlling for age, were conducted to examine gender differences in relation to the most concerning aspects associated with; (i) receiving a speeding fine, (ii) losing one’s license, and (iii) being involved in a crash. Tables 3-5 provide the descriptive statistics in accordance with the range of specific and appropriate aspects which were assessed in relation to each outcome of speeding.

**Receiving a speeding fine.** The multivariate effect of gender was significant, Wilks’  $\lambda = .97$ ,  $F(6,688) = 4.03$ ,  $p = .001$ ,  $\eta^2 = .03$  (with age as a significant covariate,  $p < .001$ ). As Table 3 shows, follow-up univariate tests, based on a Bonferroni adjustment of alpha, revealed three significant differences; specifically, males reported being significantly less concerned than females about: being caught for speeding; receiving a ticket in the mail from a speed camera;

and losing demerit points for speeding. Inspection of the mean scores as shown in Table 3, indicate that, given the 5-point scale, most items were rated above the mid-point of the scale suggesting that males and females tended to regard all aspects as “very concerning” or “extremely concerning”. The only exception to this finding was in relation to the item, losing time while being pulled over by a mobile radar for speeding, for which males’ and females’ mean scores fell at the mid-point of the scale suggesting that they felt equally and only ‘quite concerned’ about this aspect of receiving a speeding fine.

**Table 3**

Gender differences in relation to concerning aspects of receiving a speeding fine.

How concerned would you feel about...	Males <i>M (SE)</i>	Females <i>M (SE)</i>	<i>p</i> value
Being caught for speeding?	3.77 (.046)	4.15 (.084)	<.001*
Receiving a ticket in the mail from a speed camera?	3.88 (.047)	4.19 (.085)	.002*
Paying a fine for speeding?	3.99 (.047)	4.21 (.085)	.024
Losing time while being pulled over by a mobile radar for speeding?	2.95 (.055)	3.25 (.100)	.010
Paying more for insurance premiums?	3.93 (.048)	4.12 (.087)	.047
Losing demerit points for speeding?	3.94 (.048)	4.21 (1.04)	<.001*

\*Significance based on Bonferroni adjustment of .008.

**Losing one’s license.** The overall multivariate effect of gender was not significant, Wilks’  $\lambda = .99$ ,  $F(5,693) = 1.99$ ,  $p = .079$ ,  $\eta^2 = .01$ . In the absence of a significant multivariate effect, univariate effects were not examined further. Table 4 provides the descriptive statistics. Inspection of the mean scores reveals that, overall, males and females regarded all aspects assessed in relation to losing one’s license as “very concerning” or “extremely concerning”.

**Table 4**

Gender differences in relation to concerning aspects of losing one’s license.

How concerned would you feel about...	Males <i>M (SE)</i>	Females <i>M (SE)</i>
Losing your license due to too many speeding fines?	4.38 (.045)	4.63 (.083)
Experiencing automatic loss of your license due to speeding?	4.44 (.043)	4.71 (.079)
Losing your freedom because you had lost your license due to speeding?	4.39 (.045)	4.65 (.083)
Losing time because you have to use other transport options?	4.13 (.050)	4.41 (.093)
Losing the enjoyment/pleasure of driving?	4.09 (.052)	4.37 (.097)

**Being involved in a road crash.** The multivariate effect of gender was significant, Wilks’  $\lambda = .95$ ,  $F(13,659) = 2.69$ ,  $p = .001$ ,  $\eta^2 = .05$  (with age as a significant covariate,  $p < .001$ ). As Table 5 shows, follow-up univariate tests, based on a Bonferroni adjustment of alpha, revealed three significant differences; specifically, males reported being significantly less concerned than females about: being involved in a crash; seeing themselves as not a good or safe driver if they had caused a crash; and injuring themselves in a road crash. Inspection of the mean scores, as shown in Table 5, indicate that, given the 5-point scale, and with the exception of one item, males’ and females’ mean scores fell above the mid-point of the scale, suggesting that they had considered most aspects as “quite –”, “very-”, or “extremely”

concerning. The only exception to this finding was in relation to the item, seeing yourself as an unlucky driver because you had caused a crash, for which males’ mean score fell just below the mid-point (i.e., “not very concerned”) whereas females’ mean score fell at the mid-point of the scale (i.e., 3.02 or “quite concerned”).

**Table 5**  
Gender differences in relation to concerning aspects of being in a road crash.

How concerned would you feel about...	Males <i>M (SE)</i>	Females <i>M (SE)</i>	<i>p</i> value
Being involved in a crash?	3.75 (.052)	4.17 (.095)	<.001*
Seeing yourself as not a good or safe driver because you caused a crash?	3.53 (.052)	3.95 (.096)	<.001*
Losing time because you have to use other transport options?	3.39 (.054)	3.52 (.099)	.277
Injuring/killing a loved one in your vehicle in a road crash?	4.45 (.043)	4.67 (.078)	.016
Injuring/killing someone you don’t know in a road crash?	4.42 (.043)	4.68 (.079)	.004
Paying more for car insurance premiums?	3.55 (.051)	3.72 (.094)	.117
Losing respect from important others because you caused a crash?	3.73 (.053)	3.98 (.097)	.027
Injuring yourself in a road crash?	4.02 (.048)	4.46 (.087)	<.001*
Losing the enjoyment/pleasure of driving?	3.62 (.054)	3.79 (.099)	.144
Seeing yourself as an unlucky driver because you caused a crash?	2.92 (.061)	3.02 (.111)	.444
Serving time in jail for injuring/killing someone as a result of a road crash?	4.36 (.047)	4.61 (.086)	.010
Dying in a road crash?	4.26 (.051)	4.53 (.093)	.013
Important others not seeing you as a good or safe driver because you caused a crash?	3.66 (.055)	3.88 (.101)	.054

\*Significance based on Bonferroni adjustment of .003.

## Discussion

This study examined gender differences in relation to the concerns that individuals may feel in relation to a range of aspects associated with three different consequences of speeding; (i) receiving a speeding fine, (ii) losing one’s license, or (iii) being involved in a road crash. The range of items assessed were purposefully devised for this study and were intended to provide an in-depth understanding of the particular aspects which males and females considered the most concerning to them regarding these consequences of speeding. Such in-depth understanding may, ultimately, assist in the development of targeted anti-speeding messages by enabling content to address particularly personally relevant aspects that may motivate individuals to reduce/avoid speeding.

Overall, in terms of inspection of mean scores, the results indicated that males tended to be less concerned about all aspects assessed in relation to each of the outcomes relative to females, albeit significantly less so in relation to six items in particular. It is noted that while males reported being significantly less concerned than females, generally speaking, both males and females’ mean scores tended towards the high(er) end of the 5-point scale and,

thus, high(er) levels of concern. More specifically, the results indicated that, when controlling for age, significant gender differences were found in relation to items relating to only two of the three outcomes examined; receiving a fine and being in a crash and not in relation to losing one’s license. For the latter outcome, it is important to note that, while there were no overall significant gender differences, a review of males’ and females’ mean scores indicated that all items were skewed towards individuals reporting high(er) levels of concern (i.e., mean scores all at the level of “Very Concerning” or a score of 4 and above on the 5-point scale). This finding suggests that losing one’s license is indeed a matter of considerable concern to both males and females and, potentially, that a message which focused upon this outcome and the aspects associated with it occurring (e.g., losing one’s freedom or losing the ability to enjoy driving) may be perceived as personally relevant by both males and females.

This suggestion notwithstanding, to enhance perceptions of personal relevance for a high risk road user group, such as males, it may be those aspects where males and females differ, which hold promise for devising targeted persuasive attempts. For instance, for those aspects found to be significantly less concerning to males, a persuasive message may focus upon either: (i) challenging such (mis)perceptions, such as highlighting that it is an aspect that should be of greater concern; or, alternatively (ii) avoiding use of these aspects as the aversive consequences intending to discourage males from speeding given that they appear to be less personally concerning to males than females. It is difficult to determine from the current results alone whether the most effective advertising approach would be the former (i.e., challenging perceptions and attempting to raise concerns) or the latter (i.e., avoiding these aspects as the aversive outcomes of focus). Arguably, however, the most important aspect would be to acknowledge that these aspects, if presented as the primary or only threatened aversive consequence of speeding, are unlikely to be perceived as personally relevant by males (or at least, relatively less relevant to males than females). Some suggestions as to potential message content, based on such findings, are offered in the subsequent sections of this paper. These suggestions are prefaced by the acknowledgement that further research would be needed to empirically test the efficacy of such messages for persuading males.

In relation to the outcome of receiving a speeding fine, males were significantly less likely than females to report feeling concerned at the prospect of being caught for speeding, receiving a ticket in the mail from a speed camera, and losing demerit points for speeding. If the choice was to attempt to challenge males’ perceptions and to heighten their concerns associated with these aspects of receiving a speeding fine (as opposed to avoiding these aspects as the primary or only threatened aversive consequence), it would be advisable for a message to focus upon what the loss of points may mean to an individual’s life. Thus, rather than focus just on the losing points from speeding as the primary aversive outcome, a message could heighten concerns about how this happening may lead to more aversive consequences, such as license loss. Supporting this suggestion, Lewis et al. (2013) have suggested that the concerns young males have about losing demerit points may relate to the extent to which they consider their loss of points as bringing them closer to losing their license and the repercussions losing their license may have on their social life and employment. To the extent that the males in this study’s sample did rate the outcome of license loss as concerning as females (i.e., no overall significant gender difference was found for this outcome) and as something that was “very concerning” to them, then this suggestion appears reasonable and supported by the current findings as well as other available evidence.

In relation to any persuasive attempts to heighten males’ concerns regarding receiving a ticket in the mail from a speed camera, a similar manner as was suggested previously for



highlighting the broader repercussions associated with losing demerit points may be adopted. For instance, a message may depict a male opening up his speeding fine (which he received in the mail) in front of an important other, such as his girlfriend/spouse, and the subsequent negative response that they receive from that important other about having to find money for the fine and perhaps even the inability to purchase other desired goods because of the fine. Thus, such a message would demonstrate that it is not just receiving the fine in the mail that one should be concerned about but the implications in terms of potential social disapproval as well as individual disappointment that one may experience at having to use their money to pay a fine rather than to purchase something that they desire. Other evidence also supports this suggestion for message content in terms of highlighting that important others may not be impressed with speeding despite males believing that they would be and that paying a fine does mean losing money that may have been used for a more desirable purpose (see Horvath, Lewis, & Watson, 2012; Lewis et al., 2013). An alternative way of considering this finding and its implication for suggested message content may be for a message to avoid all reference to the fine being received in the mail and rather depict a male driver being pulled over for speeding and being fined on the spot. The important aspect that would be being highlighted by such a message is that heightened awareness that one could be caught for speeding at any stage.

Finally, for the finding that males reported being less concerned about being caught for speeding than females, this finding may reflect aspects relating to optimism bias, a perceptual bias likely contributing to males' beliefs that they are more skilful, and less likely to experience aversive outcomes, than others (Harre et al., 2005; White et al., 2011). This finding is also supported by other studies which have shown that females are more likely to consider getting caught as a disadvantage of speeding than males (Horvath et al., 2012).

For the outcome of being involved in a road crash, males were significantly less likely than females to report being concerned about being in a crash, seeing themselves as not a good or safe driver if they had caused a crash, and injuring themselves in a road crash. Once again, perceptual biases, such as optimism bias, may have likely contributed to each of these findings. Males appear less concerned about the prospect of being in a crash, and even if a crash was to occur, less likely to consider themselves as a less skilful or inept driver (potentially due to the belief that an out of the ordinary occurrence may cause a crash rather than their lack of skill per se; see Lewis et al., 2013) and less likely to be concerned about the prospect of sustaining personal injury. The latter finding, when considered in accordance with the current findings that males were just as concerned as females (i.e., no significant gender differences) with the prospect of others being injured or killed in a crash, affirms that males are cognisant of the possibility that others may be injured or killed in road crashes. Their tendency to consider themselves as more skilful drivers and less likely to experience aversive outcomes like a crash, however, likely functions to counter or at least attenuate these concerns as a likely happening of personal relevance to them.

For developing persuasive message content relating to the threat of a road crash occurring as the outcome, as noted previously, a substantial body of evidence has amassed which indicates that males are less likely than females to report being influenced by fear-based, physical threats of death and injury (e.g., Goldenbeld et al., 2008; Lewis et al., 2007, 2008). The current findings suggest that, if a persuasive message was devised in the attempt to raise males' concerns in relation to road crashes and potential injury, the aspect which may be focused upon could be raising males' concerns about their own personal vulnerability to being injured (given that they were less concerned with the possibility of being personally injured

than females but, were equally likely as females to be concerned about others being injured in a crash). Potentially, messages which offer information about the relatively low maximum speeds at which the human body was designed to travel and the survival rates associated with impacts occurring at incremental increases in speed may be of some value. However, any such persuasive appeal would need to be thoroughly piloted with males to ensure that it does have the intended effect given the body of evidence which suggests caution must be adopted when attempting to persuade males via physical threats (see Tay, 2002; Tay & Ozanne, 2002).

Drawing upon the current findings as well as consideration of prior available evidence, suggestions have been offered for potential message content; as noted previously, it is acknowledged that further empirical testing of messages featuring such content would need to be conducted to determine the relative effectiveness of such messages. The current study contributes to the appreciation of the complexities associated with developing effective persuasive health messages and how subtle changes in message content may impact upon individuals' relative perceptions of relevance and, ultimately, message persuasiveness. With the body of evidence amassing which suggests traditional fear-based approaches relying upon physical threats are less influential for males than females, there is a crucial need for research to continue exploration for alternative approaches to influence males as a high risk road user group. The current study, in acknowledging that the consequences of behaviour reflect a key component of any road safety message, has focused upon understanding more about what specific aspects of speeding outcomes are of concern to males and females.

## **Limitations**

Despite best efforts, the final sample resulted in a sample skewed towards a much greater representation of older male drivers relative to any other driver group. In some respects, this aspect may be considered beneficial and potentially insightful to the extent that prior research has tended to be based commonly upon university student samples which typically feature a high proportion of females relative to males. Indeed, the use of university based student samples in this research has represented a long-standing criticism of research in the field (Hastings, Stead, & Webb, 2004).

## **Conclusions**

Preventing injury and promoting health via persuasive messages is a complex task. Subtle changes in message content may have significant effects upon individuals' perceived personal relevance and, ultimately, the extent to which a message may achieve its persuasive goals. The findings reported in this paper extend upon an important body of work that Lewis and colleagues have been establishing which indicates that the aspects within a message which may be perceived differently by males and females may represent important foci for the development of targeted message content.

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## References

- Aarts, L., & van Schagen, I. (2006). Driving speed and the risk of road crashes: A review. *Accident Analysis and Prevention*, 38, 215-224.
- ATSB. (2007). *Road deaths Australia statistical summary*. Canberra: Australian Transport Safety Bureau.
- Baldwin, J. D., & Baldwin, J. I. (2001). *Behavior principles in everyday life* (2<sup>nd</sup> ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall
- Conner, M., Lawton, R., Parker, D., Chorlton, K., Manstead, A. S. R., & Stradling, S. (2007). Application of the theory of planned behaviour to the prediction of objectively assessed breaking of posted speed limits. *British Journal of Psychology*, 98, 429-453.
- Donovan, R. J., Henley, N., Jalleh, G. & Slater, C. (1995). *Road safety advertising: An empirical study and literature review*. Canberra: Federal Office of Road Safety.
- Fildes, B. N. & Lee, S. J. (1993). *The speed review: Road environment, behaviour, speed limits, enforcement and crashes*, Report CR127. Federal Office of Road Safety: Canberra. Available from: <http://www.monash.edu.au/muarc/reports/atsb127.html>
- Fleiter, J., Watson, B., Lennon, A., & Lewis, I. (2006). *Significant others, who are they? Examining normative influences on speeding*. In *Proceedings of the Australasian Road Safety Research, Policing, and Education Conference*, Gold Coast, Australia.
- Goldenbeld, C., Twisk, D., & Houwing, S. (2008). Effects of persuasive communication and group discussions on acceptability of anti-speeding policies for male and female drivers. *Transportation Research Part F: Traffic Psychology & Behaviour*, 11(3), 207–220.
- González-Iglesias, B., Gómez-Fraguela, J. A., & Luengo-Martín, M. A. (2012). Driving anger and traffic violations: Gender differences. *Transportation Research Part F: Traffic Psychology & Behaviour*, 15, 404-412.
- Harré, N., Field, J., & Kirkwood, B. (1996). Gender differences and areas of common concern in the driving behaviours and attitudes of adolescents. *Journal of Safety Research*, 27(3), 163-173.
- Harré, N., Foster, S., & O'Neill, N. (2005). Self-enhancement, crash-risk optimism and the impact of safety advertisements on young drivers. *British Journal of Psychology*, 96, 215-230.
- Hastings, G., Stead, M., & Webb, J. (2004). Fear appeals in social marketing: Strategic and ethical reasons for concern. *Psychology & Marketing*, 21(11), 961-986.

Horvath, C., Lewis, I. & Watson, B. (2012). The beliefs which motivate young male and female drivers to speed: A comparison of low and high intenders. *Accident Analysis and Prevention*, 45, 334-341.

Kloeden, C. N., McLean, A. J., Moore, V. M., & Ponte, G. (1997). *Travelling speed and the risk of crash involvement*, Report CR172. Federal Office of Road Safety: Canberra.

Lewis, I., Watson, B., & Tay, R. (2007). Examining the effectiveness of physical threats in road safety advertising: The role of the third-person effect, gender, and age. *Transportation Research Part F: Traffic Psychology & Behaviour*, 10, 48-60.

Lewis, I., Watson, B., & White, K. M. (2008). An examination of message-relevant affect in road safety messages: Should road safety advertisements aim to make us feel good or bad? *Transportation Research Part F: Traffic Psychology & Behaviour*, 11, 403-417.

Lewis, I., Watson, B., White, K. M., Elliott, B., Thompson, J., & Cockfield, S. (2012). How males and females define speeding and how they'd feel getting caught for it: Some implications for anti-speeding message development. *Australasian Road Safety Research Policing & Education Conference*. Wellington, New Zealand.

Lewis, I., Watson, B., White, K. M., & Elliott, B. J. (2013). The beliefs which influence young males to speed and strategies to slow them down: Informing the content of anti-speeding messages. *Psychology & Marketing*, 30(9), 826-841.

Tay, R. (2002). Exploring the effects of a road safety advertising campaign on the perceptions and intentions of the target and non-target audiences to drink and drive. *Traffic Injury Prevention*, 3, 195-200.

Tay, R., & Ozanne, L. (2002). Who are we scaring with high fear road safety campaigns? *Asia Pacific Journal of Transport*, 4, 1-12.

White, M. J., Cunningham, L. C., & Titchener, K. (2011). Young drivers' optimism bias for accident risk and driving skill: Accountability and insight experience manipulations. *Accident Analysis & Prevention*, 43(4), 1309-1315.